

abstract

Efforts to Minimize General Anesthesia Use in Pediatric Radiation: A Transformative Approach in LMIC Setting

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Efforts to Minimize General Anesthesia Use in Pediatric Radiation: A Transformative Approach in LMIC Setting

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Introduction: Minimizing general anesthesia (GA) in pediatric radiation therapy (RT) is essential to reduce iatrogenic risks, resource demands, and treatment complexity. This study evaluates the impact of pre-simulation interventions in minimizing GA use.

Methodology: This retrospective study reviewed pediatric RT records from January 2023 to November 2024. GA use was defined as requiring intravenous or inhaled anesthetics during simulation. Interventions included pre-simulation orientation, audiovisual distractions (e.g., television during RT), two-way audio communication with caregivers, exposure therapy, and success reinforcement (e.g., small gifts). Demographics, diagnoses, and interventions were recorded and analyzed.

Results: A total of 117 patients were reviewed from January 2023 to November 2024, with 65% being male. The majority of patients were treated for sarcomas (46%, n=54), renal tumors (21%, n=25), lymphomas (17%, n=20), CNS tumors (11%, n=13), and others (2.6%, n=3). GA utilization rates were 91% (n=11) in patients under 3 years of age, 58% (n=29) in 4–6 years, 9% (n=3) in 7–12 years, and none in patients over 13 years. In the 4–6-year age group, the most effective interventions in reducing GA use were reinforcement of success with small toys or treats (52%, n=11) and audiovisual aids (32%, n=6). Other strategies, such as caregiver involvement, use of cartoon-themed simulation gadgets, and exposure therapy, were effective in 23% of patients (n=5).

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For the 7 to 12-year age group, pre-simulation orientation was the key intervention (53%, n=15), followed by reinforcement of success (22%, n=5). These findings highlight the adaptability of 4–12-year-olds to interventions aimed at reducing GA use.

Conclusion: This study shares our experience in minimizing GA use in pediatric RT. Tailored, age-specific interventions can effectively reduce GA use in pediatric patients, and reinforcement strategies benefit younger children while pre-simulation orientation aids older ones. Establishing a pre-simulation playroom is our next step in enhancing these efforts.